2019 ADVANCED DUI TRIAL ADVOCACY

September 9 - 12, 2019
Phoenix, Arizona

CURRENT LAB ISSUES
(Defense Ploys)

Presented by:

Beth Barnes
TSRP, Assistant Phoenix City Prosecutor
Phoenix City Prosecutor's Office
&
Erin Boone
Forensic Scientist
Arizona Department of Public Safety Crime Laboratory

Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL
1951 West Camelback Road, Suite 202
Phoenix, Arizona 85015

ELIZABETH BURTON ORTIZ
EXECUTIVE DIRECTOR

Common Defense Ploys in Blood Cases

Beth Barnes, Phx City Pros Office
AZ Traffic Safety Resource Prosecutor
beth.barnes@phoenix.gov

Erin Boone, DPS Crime Lab
Criminalist IV
(602) 223-2281
eboone@azdps.gov

1

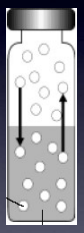
Blood Alcohol Analysis

Quick Review

Headspace Gas Chromatography

Measures alcohol content in the air above the blood

Standard in the scientific community for blood alcohol analysis



2

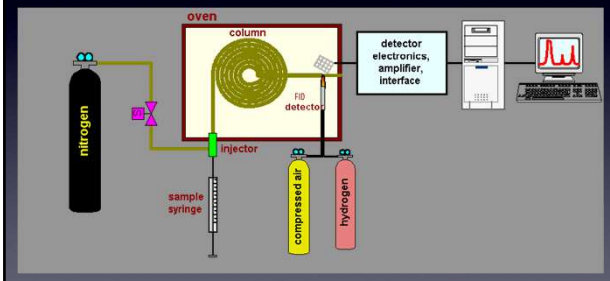
Blood Alcohol Analysis

PerkinElmer Clarus 500 w/ Turbomatix HS110

3

Blood Alcohol Analysis

Chromatography



4

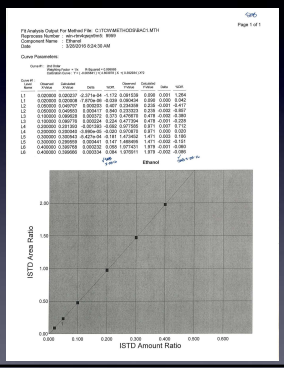
Blood Alcohol Analysis

Quality Assurance

5

Calibration Curve

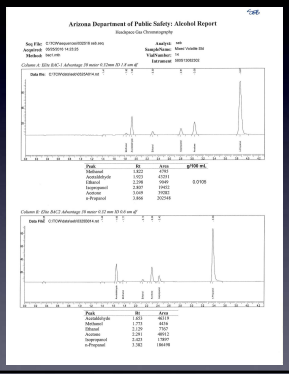
NIST Traceable Calibration: 0.02, 0.05, 0.10, 0.20, 0.30, 0.40



6

Mix Standard

Separation of Common Volatiles



Arizona Department of Public Safety: Alcohol Report

Headspace Gas Chromatography

Peak	Rt	Area	g/100 mL
Methanol	1.822	4795	
Acetaldehyde	1.923	43251	
Ethanol	2.298	9049	0.0105
Isopropanol	2.807	19452	
Acetone	3.049	39282	
n-Propanol	3.866	202548	

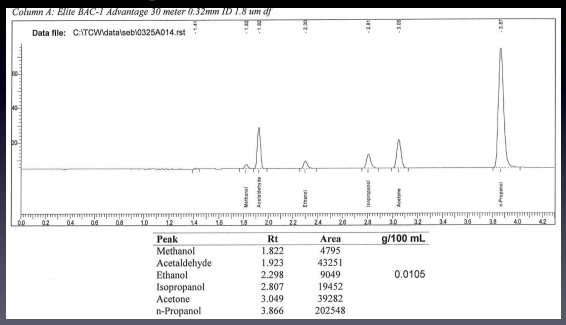
Peak	Rt	Area
Acetaldehyde	1.653	46319
Methanol	1.773	4436
Ethanol	2.129	7767
Acetone	2.291	40912
Isopropanol	2.423	17897
n-Propanol	3.382	186498

7

Mix Standard

Separation of Common Volatiles

Column A: Elite BAC-1 Advantage 30 meter 0.32mm ID 1.8 um df



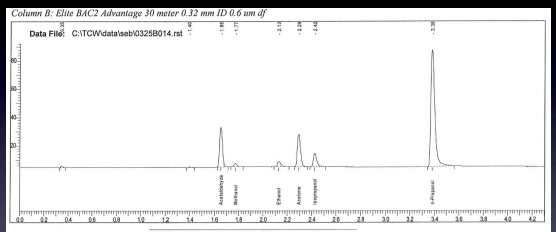
Peak	Rt	Area	g/100 mL
Methanol	1.822	4795	
Acetaldehyde	1.923	43251	
Ethanol	2.298	9049	0.0105
Isopropanol	2.807	19452	
Acetone	3.049	39282	
n-Propanol	3.866	202548	

8

Mix Standard

Separation of Common Volatiles

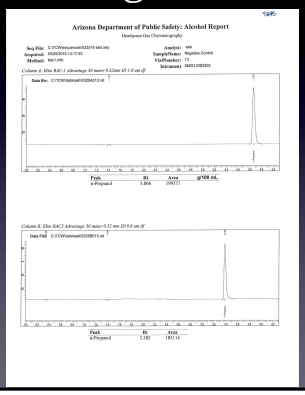
Column B: Elite BAC2 Advantage 30 meter 0.32 mm ID 0.6 um df



Peak	Rt	Area
Acetaldehyde	1.653	46319
Methanol	1.773	4436
Ethanol	2.129	7767
Acetone	2.291	40912
Isopropanol	2.423	17897
n-Propanol	3.382	186498

9

Negative


Arizona Department of Public Safety: Alcohol Report

Headspace Gas Chromatography

Column A: Elite BAC-1 Advantage 30 meter 0.32mm ID 1.8 um df

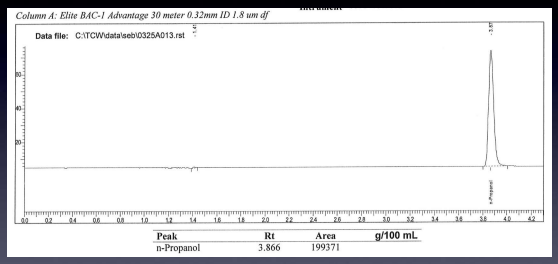
Peak | Rt | Area | g/100 mL
n-Propanol | 3.866 | 199371

Column B: Elite BAC2 Advantage 30 meter 0.32 mm ID 0.6 um df

Peak | Rt | Area
n-Propanol | 3.582 | 183116

10

Negative

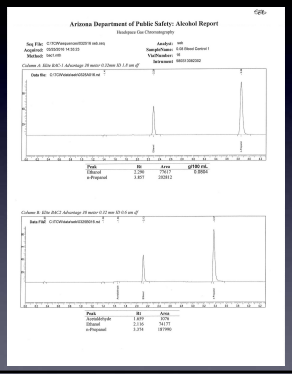


Peak	Rt	Area	g/100 mL
n-Propanol	3.866	199371	

11

Controls

Aqueous and Whole Blood


Arizona Department of Public Safety: Alcohol Report

Headspace Gas Chromatography

Column A: Elite BAC-1 Advantage 30 meter 0.32mm ID 1.8 um df

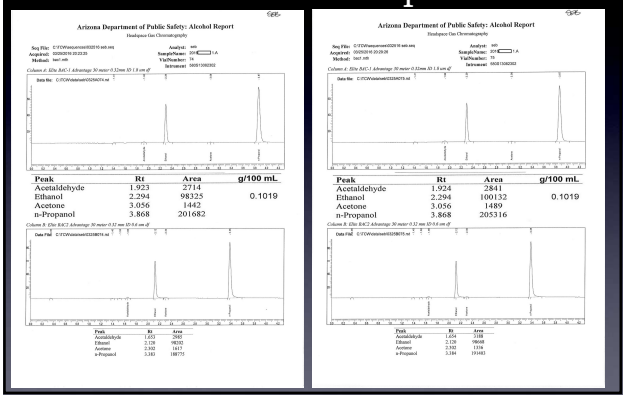
Peak | Rt | Area | g/100 mL
Ethanol | 1.290 | 79117 | 0.0884
n-Propanol | 1.855 | 202811

Column B: Elite BAC2 Advantage 30 meter 0.32 mm ID 0.6 um df

Peak | Rt | Area
Acetaldehyde | 1.859 | 9378
Ethanol | 2.116 | 74177
n-Propanol | 3.574 | 187981

12

Cases Run in Duplicate



Arizona Department of Public Safety: Alcohol Report

Headspace Gas Chromatography

Peak	Rt	Area	g/100 mL
Acetaldehyde	1.923	2714	
Ethanol	2.294	98325	0.1019
Acetone	3.056	1442	
n-Propanol	3.868	201682	

Arizona Department of Public Safety: Alcohol Report

Headspace Gas Chromatography

Peak	Rt	Area	g/100 mL
Acetaldehyde	1.924	2841	
Ethanol	2.294	100132	0.1019
Acetone	3.056	1489	
n-Propanol	3.868	205316	

13

Verification Standards

Same as Calibration Standards

Analyzed at the end of run

Verifies pipettor and calibration stability

14

Blood Alcohol Ploys

Tubes	Analysis
Swab contamination	Hanging Drop
Micro Clots	Wrong Vial
Expired Tubes	Contamination
Yeast Contamination	Rising Blood Alcohol
Not Refrigerated	All Chromatograms
Preservatives Not Present	

15

Lack of Foundation

Person objecting must indicate what is lacking

Packard v. Reidhead, 22 Ariz.App. 420 (1974)

16

Swab Contamination

Defense Claim

Unknown what type of swab was used to clean the skin prior to the blood draw

The "alcohol" swab raised the alcohol concentration inside the tube

17

Swab Contamination

Admissibility

Response

Issues of whether solution containing alcohol was used to cleanse skin before a blood test go to weight, not admissibility of test

Kaufman v. State, 632 S.W.2d 685 (Tex. Ct. App. 1982)
State v. Fox, 177 Neb. 238, 128 N.W.2d 576 (1964)

18

Swab Contamination

Arguments

Officer/Phlebotomist

Used swab that came with blood kit

Documented the type of swab used

Criminalist or Defense Expert

Swab in kits don't contain Ethanol

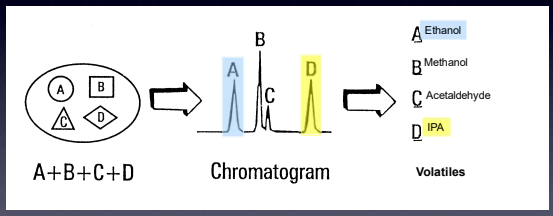
If other alcohol, GC can distinguish

Even if pure ethanol – difficult to effect

19

Blood Alcohol Analysis

Chromatography



20

Micro Clots

Defense Claim

Microscopic clots in defendant's blood sample make sample non-homogenous

Clots = Higher Aqueous Content

Artificially raises reported AC

Idea from centrifuged samples where cells are separated from serum/plasma

21

Micro Clots
Arguments

Officer/Phlebotomist

Inverted tube to mix at least recommended 8-10 times

Preservative & anti-coagulant were present

Criminalist or Defense Expert

No published studies to support theory

A clot big enough to cause a problem would not fit in pipetor tip

22

Micro Clots
Arguments

Defense Expert

Has defense expert seen this or been concerned by possibility with own casework?

If so, did they voice concerns?

Adjust their own casework numbers?

23

Expired Tube
Defense Claim

Expired grey top tubes were used to collect blood

Can't trust the test results

24

Expired Tube

Argument

If tubes are expired, only issue is vacuum loss

Successfully drawn blood = good vacuum

Preservative & anti-coagulant do not expire

Both are salts

25

Yeast Contamination

Defense Claim

Candida albicans (yeast) in blood produces alcohol inside tube (or inside body)

26

Yeast Contamination

Argument

In theory, yeast can convert glucose into ethanol

But, requires a lack of sodium fluoride, added glucose, no refrigeration, and yeast in blood

Sodium Fluoride blocks ethanol production

Sepsis would result if Candida albicans were in blood – hospitalized/death

27

Sample Not Refrigerated

Defense Claim

Lack of refrigeration allowed ethanol to increase in sample

28

Sample Not Refrigerated

Argument

Officer/Phlebotomist

Tube was stored in refrigerator

Criminalist

Preservative prevents ethanol rise whether refrigerated or not

Ethanol concentration would most likely lower

29

Preservatives Not Present

Defense Claim

Lab doesn't test for presence of preservative or anticoagulant in blood sample

Can't prove it was present in blood tube

Caused inaccurate results

30

Preservatives Not Present

Argument

Officer/Phlebotomist

Inspected tube prior to use

Criminalist

Analyst inspects tube of blood and documents any unusual appearance

Manufacturer of tube adds mixture of preservative and anticoagulant at same time

If blood not clotted, both were in the tube

31

Hanging Drop

Defense Claim

A drop of blood on the pipette tip contained ethanol & added too much blood to headspace vial

More blood = More ethanol

32

Hanging Drop

Argument

Criminalist

Blood Alcohol QC rules this out
Duplicate Sample agreement
Control agreement with target value
Calibration linearity

Defense Expert

Peer reviewed literature supporting?
Was "correction" applied to own casework?

33

Wrong Vial
Defense Claim

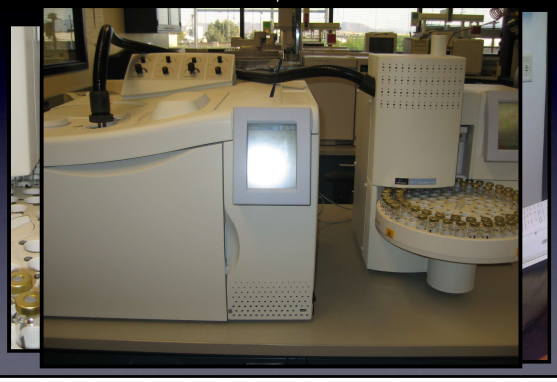
When sample was placed on GC, Criminalist mixed up samples

Instrument might have picked up wrong vial – you weren't there

Either way, reported result was not defendant's

34

Wrong Vial
GC/HS



35

Wrong Vial
Argument

Only one blood tube opened at a time

DR# labeled on tube & headspace vial

DR# verified at each step of sample prep

Samples loaded into carousel in same order as sample rack & run in sequence order

Duplicate samples must agree within 5%

Tests following error would all be off

Blood available for independent reanalysis*

36

Contamination

Defense Claim

A substance other than ethanol was in sample & came out of GC at same time as ethanol

The unknown peak is hidden behind the ethanol peak

37

Contamination

Argument

Gas Chromatography is universally recognized as separation science

Dual column virtually eliminates co-elution

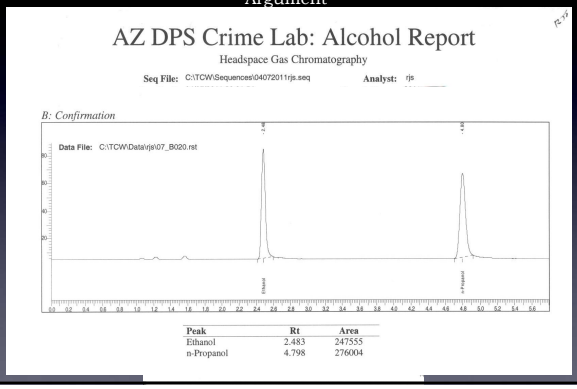
Unknown substance must be volitile compound, high enough in concentration, elute on both columns at exact times as ethanol

Method validation

38

Contamination

Argument



AZ DPS Crime Lab: Alcohol Report

Headspace Gas Chromatography

Seq File: C:\TCW\Sequences\04072011rjs.seq Analyst: rjs

B: Confirmation

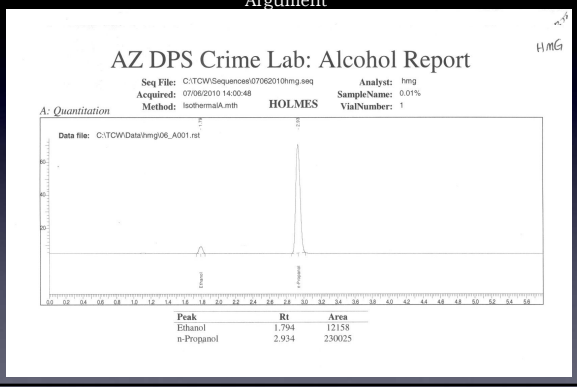
Data File: C:\TCW\Data\rjs\07_B020.rst

Peak	Rt	Area
Ethanol	2.483	247555
n-Propanol	4.798	276004

39

Contamination

Argument



AZ DPS Crime Lab: Alcohol Report

Seq File: C:\TCW\Sequences\07062010hmg.seq
Acquired: 07/06/2010 14:00:48
Method: IsothermalA.mth
HOLMES
Analyst: hmg
SampleName: 0.01%
VialNumber: 1

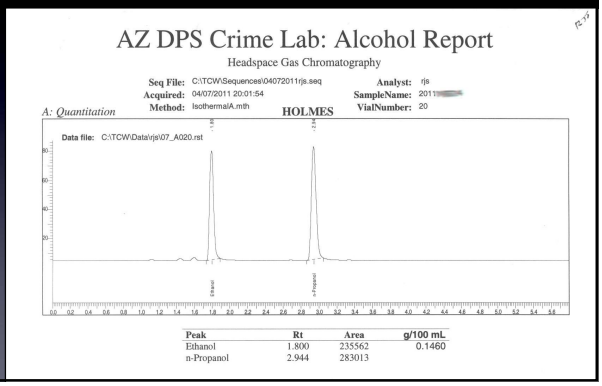
A: Quantitation

Data file: C:\TCW\Data\hmg\06_A001.rst

Peak	Rt	Area
Ethanol	1.794	12158
n-Propanol	2.934	230025

40

Bumps on the Chromatogram



AZ DPS Crime Lab: Alcohol Report

Headspace Gas Chromatography

Seq File: C:\TCW\Sequences\040720111js.seq
Acquired: 04/07/2011 20:01:54
Method: IsothermalA.mth
HOLMES
Analyst: rjs
SampleName: 201[redacted]
VialNumber: 20

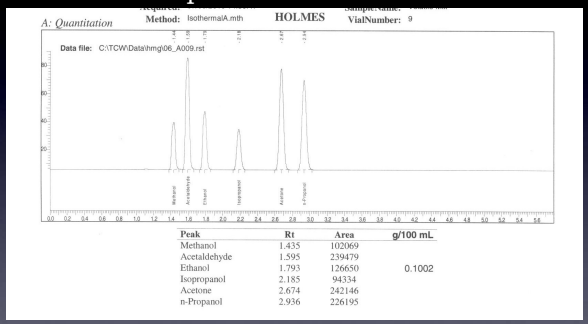
A: Quantitation

Data file: C:\TCW\Data\rjs\07_A020.rst

Peak	Rt	Area	g/100 mL
Ethanol	1.800	235562	0.1460
n-Propanol	2.944	283013	

41

May Want to Compare to Mix Standard



Method: IsothermalA.mth
HOLMES
VialNumber: 9

A: Quantitation

Data file: C:\TCW\Data\hmg\06_A009.rst

Peak	Rt	Area	g/100 mL
Methanol	1.435	102069	
Acetaldehyde	1.595	239479	
Ethanol	1.793	126650	0.1002
Isopropanol	2.185	94334	
Acetone	2.674	242146	
n-Propanol	2.936	226195	

42

Rising Blood Alcohol

Defense Claim

Blood Alcohol Concentration was lower at the time of driving than at the time of test

Defendant drank after accident

Defendant absorbs alcohol very slowly

43

Rising Blood Alcohol

Argument

Studies have shown that under normal drinking scenarios, individuals are either equal to or higher at the time of driving

Gullberg RG, Comparing Roadside With Subsequent Breath Alcohol Analysis And Their Relevance To The Issue Of Retrograde Extrapolation. Forensic Science International, 57 (1992) 193-201

44

Rising Blood Alcohol

Argument

Discredit defendant's claim of drinking after accident with officer account & witness testimony

Criminalist can mathematically account for unabsorbed drinks

Time of driving retrogrades not relevant to the (A)(1) charge

45

Rising Blood Alcohol

Argument

Hangover study by AW Jones indicated one individual with an absorption time of 230 minutes

Study flaws

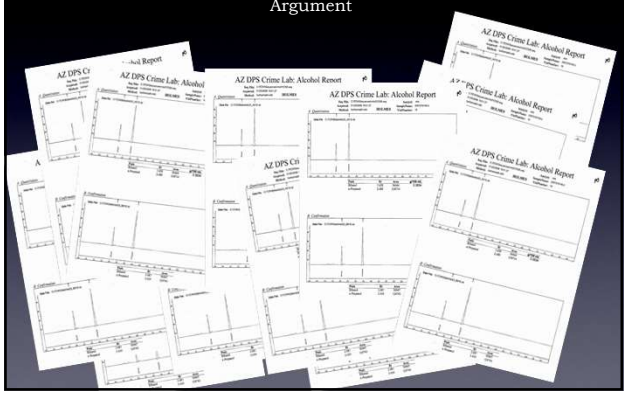
More recent studies have not verified this long of an absorption time

Gullberg study of full vs empty stomach absorption found longest rate of 80 minutes

46

Need Every Chromatogram

Argument



47

Need Every Chromatogram

Argument

Need every chromatogram of all the other samples run in the same batch

Need it to determine whether the instrument was performing properly

Check to see consistency of internal standard area counts

48

Need Every Chromatogram

Argument

QC is run with every batch to ensure validity and accuracy of each test

Samples not meeting duplicate agreement are re-run in a later batch

Entire batches are not re-run for samples not meeting duplicate agreement

Case samples meeting agreement are not used to validate other case samples

Internal standard compensates for slight variations

49

Blood Alcohol Analysis

Bottom Line

Talk with the Criminalist

Learn the science

For admissibility, is it a FACT question?

Argue speculation and irrelevant

50

Questions?

Erin Boone, DPS Crime Lab
Criminalist IV
(602) 223-2281
eboone@azdps.gov

Beth Barnes, Phx City Pros Office
AZ Traffic Safety Resource Prosecutor
beth.barnes@phoenix.gov

51

Hematocrit

Defense Claim

Hematocrit is the solid material in blood comprised of mostly red and white blood cells

High hematocrit level = Less water in blood

Less water = Higher alcohol concentration

52

Hematocrit

Argument

Higher alcohol concentration = More Impairment

53

Salting Out

Defense Claim

Sodium fluoride preservative drives more ethanol from blood into headspace

Artificially raises reported value

54

Salting Out

Argument

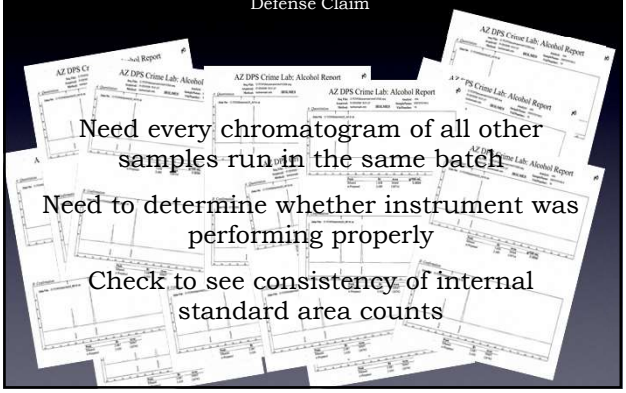
Dilution lowers concentration of salt

Study: adding more and more sodium fluoride caused alcohol level to drop

55

Need Every Chromatogram

Defense Claim



Need every chromatogram of all other samples run in the same batch

Need to determine whether instrument was performing properly

Check to see consistency of internal standard area counts

56

Need Every Chromatogram

Argument

QC is run with every batch to ensure validity and accuracy of each test

Samples not meeting duplicate agreement are re-run in a later batch

Entire batches are not re-run for samples not meeting duplicate agreement

Case samples meeting agreement are not used to validate other case samples

Internal standard compensates for slight variations

57

Chain of Custody
Defense Claim

Sample analyzed may not be defendant's

Someone tampered with sample

58

Chain of Custody
Argument

Officer

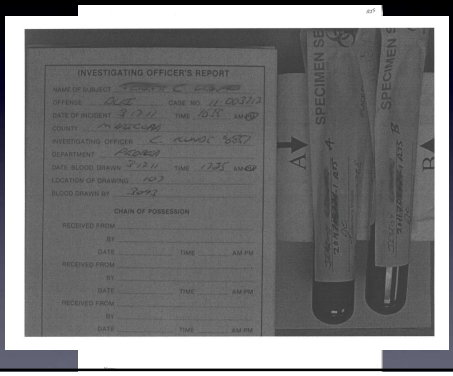
How was sample labeled?
Where was sample placed?
Protocols?

Criminalist

Where was sample obtained?
How was it labeled?

59

Chain of Custody
Criminalist Notes



60

Chain of Custody
Argument

Defense may stipulate to part or all of chain

Challenges to chain of custody go to weight, not admissibility

Defendant must make some showing that evidence was tampered with

State v. Morales, 170 Ariz. 360 (App. 1991); *State v. Moreno*, 26 Ariz.App. 178 (1976) *Melendez-Diaz v. Massachusetts*, 2009 WL 1789468 FN1 (US Sup.Ct. 6/23/09).

61

Heads Up
Uncertainty

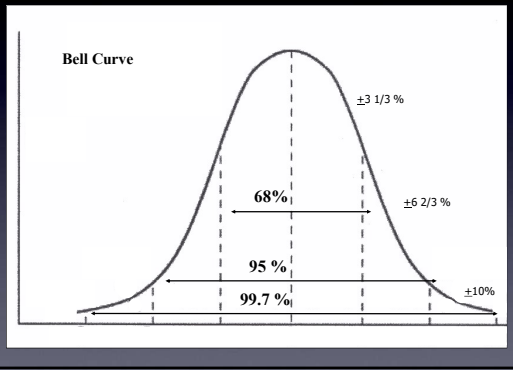
Measurement uncertainty is a parameter that characterizes the variability of a measured value

ISO 17025 - ASCLD-LAB Accreditation

Less than 5%

62

Heads Up
Uncertainty



63

2019 ADVANCED DUI TRIAL ADVOCACY

September 9 - 12, 2019
Phoenix, Arizona

CURRENT LAB ISSUES
(Defense Ploys)

Presented by:

Beth Barnes
TSRP, Assistant Phoenix City Prosecutor
Phoenix City Prosecutor's Office
&
Erin Boone
Forensic Scientist
Arizona Department of Public Safety Crime Laboratory

Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL
1951 West Camelback Road, Suite 202
Phoenix, Arizona 85015

ELIZABETH BURTON ORTIZ
EXECUTIVE DIRECTOR

Common Defense Ploys in Blood Cases

Beth Barnes, Phx City Pros Office
AZ Traffic Safety Resource Prosecutor
beth.barnes@phoenix.gov

Erin Boone, DPS Crime Lab
Criminalist IV
(602) 223-2281
eboone@azdps.gov

1

Breath Alcohol Analysis

Quick Review

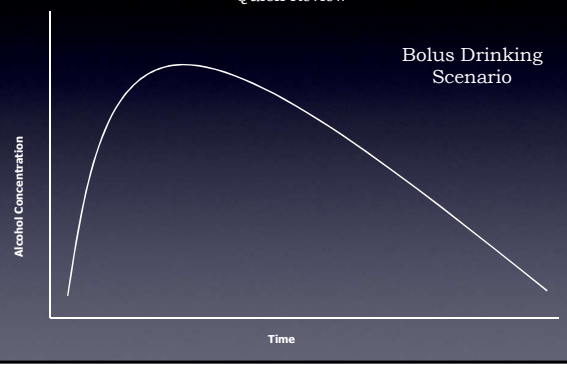
Absorption – Alcohol entering the body

Elimination – Alcohol leaving the body

2

Breath Alcohol Analysis

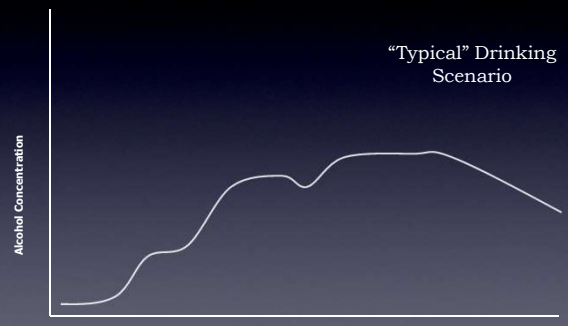
Quick Review



3

Breath Alcohol Analysis

Quick Review



4

Breath Alcohol Analysis

Quick Review

INTOXILYZER®

8000

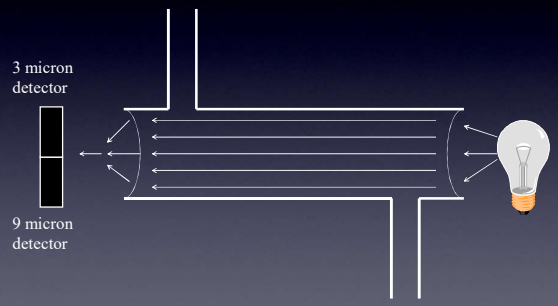
5

INTOXILYZER 9000

6

Breath Alcohol Analysis

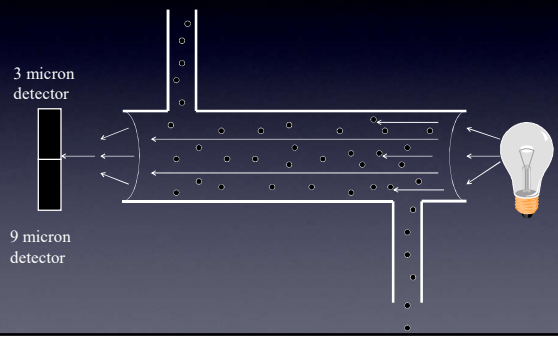
Quick Review



7

Breath Alcohol Analysis

Quick Review

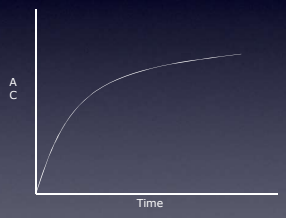


8

Breath Alcohol Analysis

Quick Review

<u>Minimum Sample Criteria</u>
Flow rate - 0.15 L/sec
Time – 1 sec
Volume – 1.1 L
Level Slope



9

Breath Alcohol Analysis

Quick Review

A 15-min deprivation period

A 5-min wait between consecutive subject tests

A 0.020 agreement between consecutive duplicate subject tests

Air blanks that are EtOH and interferent-free
Bracketing concurrent calibration checks (+/- 10%)

Bracketing diagnostic checks (Checks all internal systems of instrument)

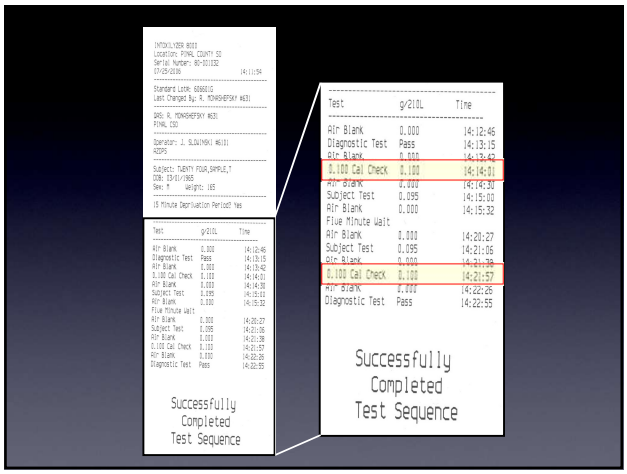
10

Breath Alcohol Analysis

Quick Review

28-1323(A)(5) - Calibration checks with a standard alcohol concentration solution bracketing each person's duplicate breath test are one type of records of periodic maintenance that satisfies the requirements of this section.

11



12

Breath Alcohol Ploys

Steepling
Blood/Breath Ratio
RFI
Mouth Alcohol
15 Minute Deprivation Period
Dry Gas Calibration Checks
Breathing Patterns
Duplicate Test Differences
Test 29ml - Report 210L
Interfering Substances
10% Off

13

Steepling

Defense Claim

Dubowski found that the alcohol concentration in the body is changing by large amounts over short periods of time

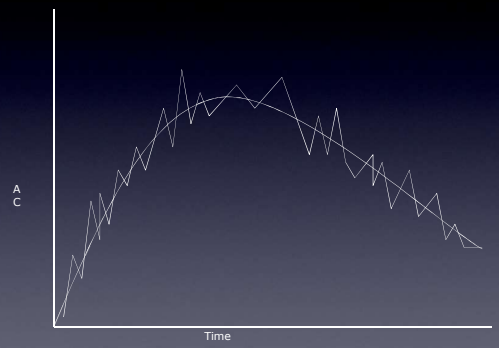
Absorption, Distribution, and Elimination of Alcohol: Highway Safety Aspects Dubowski 1985

Can't do retrograde

14

Steepling

Defense Claim



15

Steepling
Arguments

Criminalist or Defense Expert

Dubowski study was flawed

Single test – two digits

Peer reviewed literature since has shown no 'steeping' effect

16

Blood to Breath Ratio
Defense Claim

Defendant might have an abnormally low partition ratio causing an elevated BrAC

Defendant may have had a fever that caused an elevated BrAC

Everyone's temperature changes throughout the day

17

Blood to Breath Ratio
Arguments

In 1973 Federal Department of Transportation established Title 49 Code Federal Regulations (49CFR382.107)

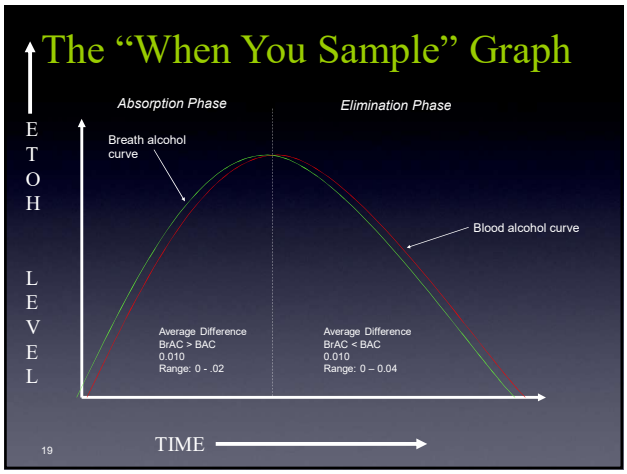
USDOT mandates instruments use 2100:1

Average partition ratio is 2350:1

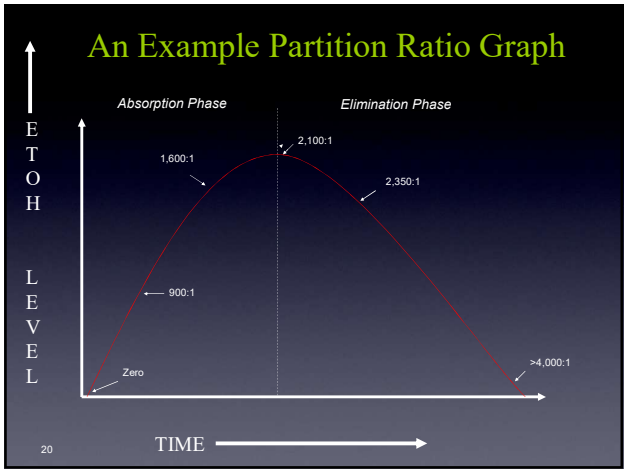
Large study (21582 drinkers) found 2440:1

A.R. Gainsford, A large scale study if the relationship between blood and breath alcohol concentration in New Zealand drinking drivers, J Forensic Sci. 51; 173-178; 2006

18



19



20

Blood to Breath Ratio

Arguments

2100:1 will underestimate a blood result 95% of the time

Defendants BrAC will typically be 10% below their blood alcohol concentration

21

Blood to Breath Ratio

Arguments

Theoretically, body temperature affects the partition ratio by imparting more or less alcohol into the lungs

Study showed for every degree Celsius of fever, breath alcohol will rise 6.5%

-10% (2100:1) + 6.5%(100.4°F fever) = -3.5%

Dubowski KM, Breath-alcohol simulators: scientific basis and actual performance, Journal of Analytical Toxicology, 3, 177-182.

22

Blood to Breath Ratio

Arguments

Recent study demonstrated that within normal range of body temperatures (96.8°F to 99.68°F) breath alcohol concentrations not effected

Cowan, The Relationship of Normal Body Temperature, End Expired Breath Temperature, and BAC/BrAC Ratio in Physically Fit Human Test Subjects. Journal of Analytical Toxicology, Vol. 34, June 2010

23

Blood to Breath Ratio

Let's do the math

Blood = 0.168g/100ml

Breath = 0.153g/210L

What is the partition ratio?

Convert to same units:

Blood = 1.68g/L Breath = 0.00073g/L

1.68/0.00073 = 2301 partition ratio

24

Blood to Breath Ratio

Let's do the math

Partition Ratio = 1350

Breath = 0.153g/210L

What would have been my blood alcohol?

.153/210 = 0.000728g/L

BAC/0.000728 = 1350

BAC = 0.983g/L = 0.0983g/100ml

25

Blood to Breath Ratio

Arguments

Irrelevant unless evidence is presented that defendant actually had elevated temperature (motion *in limine*)

Defense always presents extremes – very unlikely Defendant was at that level.

26

Blood to Breath Ratio

Arguments

Never relevant to 28-1381(A)(2) or 28-1382(A) charges.

Only relevant to 28-1381(A)(1) charge in very limited circumstances:
only if presumptions are requested **and** if accompanied by evidence defendant's particular partition ratio **at the time of the breath test** differed **significantly** from norm.

Guthrie v. Jones, 202 Ariz. 273, 43 P.3d 601 (App. 2002).

27

Blood to Breath Ratio

Arguments

Consider a Motion *In Limine* to Preclude

If the Evidence is Allowed:

Most defense experts will admit 2100 to 1 partition ratio is to defendant's benefit
Should admit recognized average is 2350 to 1

The expert does not know defendant's ratio – (speculation)

28

RFI

Defense Claim

RFI might have caused the Intoxilyzer to read high

Mark Stoltman did a "study" while at Phoenix PD that showed RFI can raise a breath test result

0.020 and .015 on alcohol free test

29

RFI

Argument

Never validated

Never submitted for publication

RFI detector turned down or off

Searched for the "Sweet Spot"

New software

30

Mouth Alcohol

Defense Claim

Defendant burped before/while blowing into instrument

Defendant had gum, chewing tobacco, dentures in mouth that caused a high reading

31

Mouth Alcohol

Argument

Burp is just air – stomach contents containing alcohol would need to be brought up into the mouth to have any effect (when was last drink?)

Three Safeguards
15 minute deprivation period
Duplicate test (0.020 agreement)
Mouth alcohol detection

32

15 Minute Deprivation Period

Defense Claim

The deprivation period might have only been 14 minutes and 32 seconds

Officer left the room in the middle of the deprivation period

Does not meet statutory method for admitting breath test result

33

15 Minute Deprivation Period

Argument

Unlikely mouth alcohol effected test

Still have two valid safeguards in place

But… most important safeguard against mouth alcohol not valid

Criminalist will be of little help

Officer is your only hope

34

Dry Gas Calibration Check

Defense Claim

The Dry Gas standard used to perform a calibration check does not contain water

Defendant's breath sample contained water vapor

Can't use calibration checks to show instrument was working properly

35

Dry Gas Calibration Check

Argument

Intoxilyzer 8000 is calibrated with wet bath calibration standards that contain water vapor

Water vapor accounted for in calibration procedure

Dry Gas standard is used during calibration procedure

36

Breathing Patterns

Defense Claim

Defendant hyperventilated before blowing into instrument

Defendant hypoventilated before blowing into instrument

Holding breath caused higher breath test

37

Breathing Patterns

Argument

Irrelevant unless there is evidence defendant held breath (motion *in limine*)

Have officer testify defendant did not hold breath prior to test

In study, subjects held breath for 30 seconds = 15% increase

Hyperventilation dropped by 10%

Trained officer would notice this

38

Difference Between Duplicates

Defense Claim

1st Breath Test = 0.158 g/210L

2nd Breath Test = 0.177 g/210L

Mouth alcohol might have been present in both samples

Defendant's alcohol concentration was rising

39

Difference Between Duplicates

Argument

Difference is still within accepted 0.020 agreement

Difference most likely caused by the quality of the sample given

Two measurements are not enough to determine if subject is still absorbing alcohol or eliminating alcohol

40

Measure 29ml – Report 210L

Defense Claim

The Intoxilyzer 8000 sample chamber only holds 29ml of breath

When the value is converted to g/210L, any error in the measurement is exponentially increased

41

Measure 29ml – Report 210L

Argument

The Intoxilyzer is calibrated in g/210L

There is not a conversion of numbers

Calibrated in g/210L – Reported in g/210L

42

Interfering Substances

Defense Claim

Defendant is diabetic – acetone caused high reading

Body breaks down ethanol into acetaldehyde which caused high reading

Defendant is a painter, bartender, etc.

43

Interfering Substances

Argument

Intoxilyzer 8000 measures alcohol in the 9 micron range

Compares 3 micron and 9 micron range to notify officer of any interfering substances

Body is able to eliminate fumes inhaled before concentration builds in body

44

10% Off

Defense Claim

Arizona Rules require a calibration check to be within ±10% of the known value

Subject test could be as much as 10% high (10% margin of error)

(Unfortunately, many officers have fallen into this same trap)

45

10% Off
Argument

Does not entitle defendant to a judgment of acquittal of ARS §§ 28-1381(A)(2) or 28-1382 charges
Question of fact which should be submitted to jury

State ex rel. McDougall v. Superior Court (*Gurule*, RPI), 178 Ariz. 544, 875 P.2d 203 (App. 1994).

46

10% Off
Argument

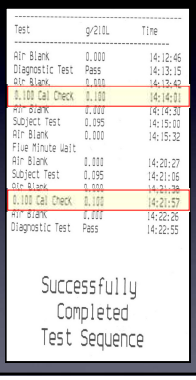
Get defense expert to admit best indicators of how accurately instrument is working at time of any given test are the before and after reference checks

Look at data for your test – it is very unlikely test is off by 10%

Generally instruments are either right on or reading a little low

47

10% Off
Argument



Test	g/210L	Time
Air Blank	0.000	14:12:46
Diagnostic Test	Pass	14:13:15
Air Blank	0.000	14:13:42
0.100 Cal Check	0.100	14:14:01
Air Blank	0.000	14:14:31
Subject Test	0.095	14:15:03
Air Blank	0.000	14:15:32
Five Minute Wait		
Air Blank	0.000	14:20:27
Subject Test	0.095	14:21:06
Air Blank	0.000	14:21:38
0.100 Cal Check	0.100	14:21:57
Air Blank	0.000	14:22:26
Diagnostic Test	Pass	14:22:55

Successfully Completed Test Sequence

48

10% Off

Argument

Demonstrate defense is partaking in mere speculation. There is no evidence instrument is reading high

To be certified by DPS, must be capable of measuring alcohol to within ± 5%

CMI, Inc. states 3%

49

Testimony

Bottom Line

Talk with the Forensic Scientist

Learn the science

Figure out how to ask the question for the answer you're trying to get out

For admissibility, is it a FACT question?

Argue speculation and irrelevant

50

Questions?

Erin Boone, DPS Crime Lab
Forensic Scientist
(602) 223-2281
eboone@azdps.gov

Beth Barnes, Phx City Pros Office
AZ Traffic Safety Resource Prosecutor
(602) 262-6461
beth.barnes@phoenix.gov

51